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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,655	09/28/2001	C. Bret Elzinga	6922.19	5235
21999	7590	12/20/2005	EXAMINER	
KIRTON AND MCCONKIE 1800 EAGLE GATE TOWER 60 EAST SOUTH TEMPLE P O BOX 45120 SALT LAKE CITY, UT 84145-0120			JARRETT, SCOTT L	
			ART UNIT	PAPER NUMBER
			3623	
DATE MAILED: 12/20/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,655

Applicant(s)

ELZINGA ET AL.

Examiner

Scott L. Jarrett

Art Unit

3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/4/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Title

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: System and Method To Optimize The Schedule Of A Plurality of Events in a Framework.

Claim Objections

2. Claims 2 and 14 are objected to because of the following informalities: claims 2 and 14 are missing a conjunction (e.g. and, or) between the recited method steps. Appropriate correction is required.

Examiner interpreted the claim to read "...within the framework; and/or reevaluating...." for the purposes of examination.

Claim 6 is objected to because of the following informalities: schedule system as claimed "can also perform", however the system does not actually perform event swapping. For the purposes of examination examiner assumes the applicant will amend the claim to recite that scheduling system actually performs event swapping.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaerf, A., A Survey of Automated Timetabling (Jan. 1999).

Regarding Claims 1, 5-11 and 13 Schaerf teaches a plurality of old and well known timetabling methods/processes applied, both manually and in an automated fashion, to school, course, examination and room scheduling wherein "The timetabling problem consists of scheduling a sequence of lectures between teachers and students in a prefixed period of time (typically a week), satisfying a set of constraints of various types." (Abstract; Pages 1-2).

More specifically Schaerf teaches a method and system for generating a schedule (timetable, calendar, etc.) that is filled with a plurality of events (meetings, holidays, classes, lessons, appointments, etc.) comprising:

- defining a framework (base, baseline, calendar, master schedule, blank schedule, template, timetable, etc.) to serve as the schedule and to be populated (scheduled) with a plurality of events, the framework defining periods of time and days to be populated (periods, timeslots, etc.; Abstract; Page 1, Paragraphs 1-3; Page 2, Paragraphs 1-3; Section 2.5.1, Page 10; Pages 15-17; Appendix C, Pages 36-37);

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- inserting at least one immutable (set, fixed, invariable, etc.) event (e.g. holiday, pre-assignments, unavailabilities; Section 3.3.1, Pages 17-18; Section 4.3.1, Page 25);
- populating the framework with the remaining plurality of events (Section 2.1, Pages 5-6; Section 2.5.1, Page 10);
- determining whether the selected/remaining plurality of events can populate the framework with conflict (clashes, overlap, intersection, etc.) within the periods of timed and days to be scheduled (Section 2.1, Pages 5-6, Section 2.5.1, Page 10; Section 2.5.5, Pages 12-13);
- adjusting a time value (e.g. start/end time/day, length, etc.) for a given event that cannot fit within the framework at a selected time/day period until the event fits in the framework (Section 3.3.3, Page 18; Section 4.3.3, Page 26);
- determining delays (lags, breaks, separation) allowed between selected plurality of events (Page 6, Last Paragraph; Page 16, Last Paragraph; Section 3.3.3, Page 18; Section 4.3.3, Page 26);
- allocating the allowed delays to optimize the schedule (e.g. event spreading; Page 6, Last Paragraph; Page 16, Last Paragraph)
- evaluating selected plurality of the events having a preferred time specifications (teacher/student preferences/priorities, time pattern, constraints, etc.; Section 2.5.7, Page 13, Pages 10, 17-18);
- allocating the selected plurality of events based on their preferred time specifications (Section 2.5.7, Page 13, Pages 10, 17-18);

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- calculating an optimization value (cost, penalty, score, temperature, etc.) based on time, delay or time/day conflicts (clashes) among the plurality of events (Section 1.2, Page 2; Section 4.2, Pages 24-25; Appendix C, Pages 36-37);
- determining whether the optimization value achieves a best-solution/threshold value (e.g. temperature ~0; Section 1.2, Page 2; Section 4.2, Pages 24-25; Appendix C, Pages 36-37); and
- performing event swapping (musical chairs, re-organization, re-scheduling, move, cancel, etc.) to improve the optimization value until the best-solution/threshold value is reached (Section 2.5.5, Pages 12-13; Section 4.3.3, Page 27).

Regarding Claims 2, 12 and 14 Schaerf teaches a system and method for generating a schedule further comprising:

- determining relationships between events placed within the framework (associations, pre-requisites, etc.; Section 2.1, Pages 5-6; Section 3.3.2, Pages 17-18); and
- re-evaluating the optimization value based on the event relationships (Section 2.1, Pages 5-6; Section 3.3.2, Pages 17-18).

Regarding Claims 3 and 15 Schaerf teaches a system and method for generating a schedule further comprising determining the optimization value based on events that have a frequency greater than one (Section 2.1, Pages 5-6; Section 2.4.1, Page 8; Section 3.1, Pages 15-16; Section 4.4.3, Page 27).

Regarding Claims 4 and 16 Schaerf teaches a system and method for generating a schedule further comprising determining the optimization value based on events that are to be excluded (e.g. pre-assignments, unavailabilities, etc.; Page 7).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Haynes et al., U.S. Patent No. 5,842,177, teach a method and system for managing a calendar of events such as academic schedules wherein the plurality of events are associated/linked/grouped with each other.

- Bucci et al., U.S. Patent No. 6,823,315, teach a dynamic scheduling system and method wherein a plurality of events (activities, employees, shifts, etc.) are optimally scheduled using simulated annealing. Bucci et al. further teach that the dynamic scheduling system continually re-schedules shifts/events until a threshold value is reached and that the system/method shrinks/stretches shifts/events to achieve the optimal schedule.

- Synder et al., U.S. Patent Publication No. 2004/0009461, teach a system and method for scheduling educational classes/teaches/students. Synder et al. further teach a plurality similar systems/methods that are well known and/or commonly used.

- Synder et al., U.S. Patent Publication No. 2004/0115596, teach a system and method for scheduling educational classes/teaches/students. Synder et al. further teach a plurality similar systems/methods that are well known and/or commonly used.

- Mausser et al., The application of annealed neural network to a timetabling problem, teach a dynamic scheduling system and method wherein the system/method utilizes an annealed neural network to optimize/solve a three-dimensional timetabling problem.

- Ferland, Jacques, SAPHIR: A decision support system for course scheduling, teaches a system and method for dynamically scheduling a plurality of events (classes) wherein the system/method solves/optimizes the well known timetabling and grouping sub problems.

- Thompson, G.M., A simulated-annealing heuristic for shift scheduling using non-continuously available employees, teaches the application of well known simulated-annealing heuristics applied to dynamically scheduling a plurality of events (shifts).

- Wong, Ho et al., A computer-based support system for the timetabling problem, teach a system and method for educational timetabling.

- Layfield, Colin James, Investigations into the master timetabling problem, teaches a plurality of well-known systems/methods for dynamically scheduling classes/students/teachers (academic timetabling)

- Flouds, L.R. et al., SlotManager: A microcomputer-based decision support system for university timetabling, teach a system and method for constructing/generating university timetables (dynamic schedules).

- Abdennadher, Slim et al., University Course Scheduling Using Constraint Handling Rules, teach a method/system for optimizing/solving the well-known university course timetabling problem utilizing constraint programming rules.

- Martinsons, Maris et al., Intelligent Timetabling Using a Computer, teach a plurality of well-known methods/approaches to dynamically scheduling a plurality of events such as academic timetabling wherein timetabling comprises at least the following steps: information collection, time selection, room selection, conflict relief and

record keeping/updating. Martinsons et al. further teach that the timetabling system/method takes into account specified schedule preferences and/or constraints as well as utilizes an iterative approach to solve/optimize the schedule.

- Mooney, Edward et al., Large Scale Classroom Scheduling, teach a system and method for course scheduling at Purdue University. Mooney et al. further teach that the timetabling system/method comprises of a plurality of steps including determining course requirements, allocating rooms to departments, handling request for large rooms, scheduling common rooms, building master course schedule, pre-registering students and assigning students to sections.

- Henz, Martin, Using Oz for College Timetabling, teach a system and method for dynamically scheduling events (classes, teachers, etc.) utilizing well-known constraint programming techniques/approaches.

- Elmohamed, Saleh et al., A comparison of annealing techniques for academic course scheduling, teach a plurality of well-known systems and methods for academic course scheduling (timetabling) wherein the methods/systems utilize common annealing techniques to solve/optimize the schedule of events.

- Banks, Don et al., A Heuristic Incremental Modeling Approach to Course Timetabling, teach a method and system for solving the general timetabling problem which "is an assignment of activities to fixed time intervals, adhering to a predefined set of resource availabilities" by modeling the problem as a constraint satisfaction problem comprises two sub problems master timetabling and student sectioning/grouping.

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- Burke, Edmound, et al., Lecture Notes in Computer Science – Practice and Theory of Automated Timetabling II, teach a plurality of well-known approaches (methods, techniques, etc.) for dynamically and optimally scheduling a plurality of events in a framework (timetabling).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


12/9/2005


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